WHAT IS CLAIMED IS:

1. An apparatus for measuring a jitter of a signal under measurement comprising:

a timing jitter estimator to which the signal under measurement is inputted for obtaining its timing jitter sequence;;

a first differentiator to which the timing jitter sequence is inputted for calculating its difference sequence to output a period jitter sequence;

a corrector part to which the period jitter sequence is inputted for multiplying the period jitter sequence by a ratio $T_0/T_{k,k+1}$ of a fundamental period T_0 of the signal under measurement and the approximated zero-crossing point interval $T_{k,k+1}$ to output a corrected period jitter sequence; and

a jitter detecting part to which the corrected period jitter sequence is inputted for obtaining a jitter of the signal under measurement.

2. The apparatus for measuring a jitter of the signal under measurement according to claim 1 further including a second differentiator to which the corrected period jitter sequence is inputted for calculating its difference sequence to output the difference sequence to said jitter detecting part as a cycle-to-cycle period jitter, said second differentiator being inserted between said correcting part and said jitter detecting part.

3. The apparatus for measuring a jitter of the signal under measurement according to claim 1 or 2 further including a zero-crossing point detecting part to which a real part of the analytic signal is inputted for obtaining a

point close to its zero-crossing timing to output the sampling timing sequence, wherein said timing jitter estimator comprises;

an analytic signal transforming part to which the signal under measurement is inputted for transforming the signal under measurement to a complex analytic signal;

an instantaneous phase estimating part to which the analytic signal is inputted for obtaining an instantaneous phase of the analytic signal;

a continuous phase converter for converting the instantaneous phase to a continuous instantaneous phase;

a linear phase estimating part to which the continuous instantaneous phase is inputted for obtaining a linear phase of the continuous instantaneous phase;

a subtracting part to which the linear phase and the instantaneous phase are inputted for removing the linear phase from the instantaneous phase to obtain the instantaneous phase noise; and

a zero-crossing sampler for sampling the inputted signal using the sampling timing sequence to output the sampled signal, said zero-crossing sampler being inserted in series to any one of connection points between said instantaneous phase estimating part and said continuous phase converting part, between said continuous phase converting part and said linear phase estimating part/subtracting part, and between said subtracting part and said first differentiator.

4. The apparatus for measuring a jitter of the signal under measurement according to claim 3 further including a zero-crossing interval calculating part to which an output timing sequence of the sampling timing sequence is

inputted from said zero-crossing point detecting part for calculating its difference sequence to obtain the approximated zero-crossing point intervals $T_{k,k+1}$ in the sequential order, and for outputting the approximated zero-crossing point intervals $T_{k,k+1}$ to said corrector part.

5. The apparatus for measuring a jitter of the signal under measurement according to claim 4 further including a fundamental period estimating part to which the linear phase is inputted from said linear phase estimating part for obtaining the fundamental period T_0 from its inclination, and for outputting the fundamental period T_0 to said correcting part.

6. The apparatus for measuring a jitter of the signal under measurement according to claim 4 further including a fundamental period estimating part to which the signal under measurement is inputted for obtaining its fundamental period T_0, and for outputting the fundamental period T_0 to said correcting part.

7. The apparatus for measuring a jitter of the signal under measurement according to claim 3 further including a waveform clipper to which the signal under measurement is inputted for removing its amplitude modulation components in the state that its phase modulation components are kept therein to supply the signal under measurement from which the amplitude modulation components have been removed to said instantaneous phase noise detecting part.

8. A method of measuring a jitter of a signal under measurement

comprising:

a step of obtaining a timing jitter sequence of the signal under measurement;

;

a step of calculating a difference sequence of the timing jitter sequence to generate a period jitter sequence:

a step of multiplying the period jitter sequence by a ratio $T_0/T_{k,k+1}$ of a fundamental period T_0 and the approximated zero-crossing point interval $T_{k,k+1}$ to obtain a corrected period jitter sequence; and

a step of obtaining a period jitter of the signal under measurement from the corrected period jitter sequence.

9. A method of measuring a jitter of a signal under measurement comprising:

a step of obtaining a timing jitter sequence of the signal under measurement;

a step of calculating a difference sequence of the timing jitter sequence to generate a period jitter sequence:

a step of multiplying the period jitter sequence by a ratio $T_0/T_{k,k+1}$ of a fundamental period T_0 and the approximated zero-crossing point interval $T_{k,k+1}$ to obtain a corrected period jitter sequence;

a step of calculating a difference sequence of the corrected period jitter sequence to generate a cycle-to-cycle period jitter sequence: and

a step of obtaining a cycle-to-cycle period jitter of the signal under measurement from the cycle-to-cycle period jitter sequence.

10. The method of measuring a jitter of the signal under measurement according to claim 8 or 9 further including a step of obtaining a point close to a zero-crossing timing of a real part of the analytic signal to obtain the approximated zero-crossing point, wherein said timing jitter estimating step comprises:

a step of transforming the signal under measurement to a complex analytic signal;

a step of obtaining an instantaneous phase of the signal under measurement from the analytic signal;

a step of transforming the instantaneous phase to a continuous instantaneous phase;

a step of obtaining a linear phase from the continuous instantaneous phase;

a step of removing the linear phase from the continuous instantaneous phase to obtain the instantaneous phase noise; and

a step of sampling any one of the instantaneous phase, the continuous instantaneous phase and the instantaneous phase noise at the approximated zero-crossing timing.

11. The method of measuring a jitter of the signal under measurement according to claim 10 further including a step of calculating a difference sequence of a timing sequence that represents the approximated zero-crossing points to obtain the approximated zero-crossing point intervals $T_{k,k+1}$ in the sequential order.

12. The method of measuring a jitter of the signal under measurement

according to claim 11 further including a step of obtaining the fundamental period T_0 from an inclination of the linear phase.

13. The method of measuring a jitter of the signal under measurement according to claim 11 further including a step of obtaining the fundamental period T_0 from the signal under measurement.

14. The method of measuring a jitter of the signal under measurement according to claim 10 further including a step of removing amplitude modulation components of the signal under measurement in the state that its phase modulation components are kept therein to move to said timing jitter estimating step.